MetroFuture:

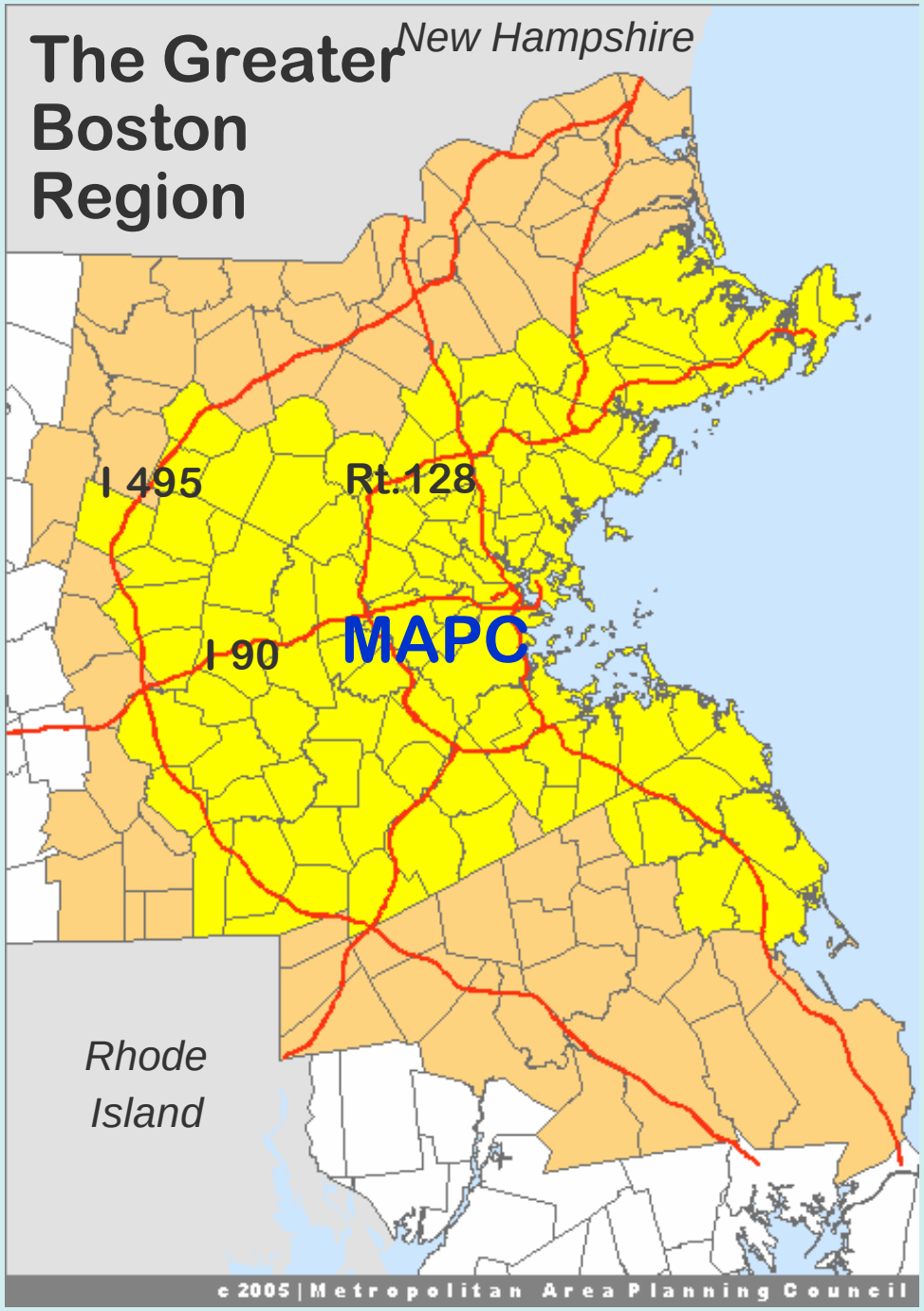
Making a Greater Boston Region

Water Supply Component of the Regional Plan

Summary of Current Trends to 2030

The Study Area

- 164 Communities
  - 101 Communities in MAPC region
  - Plus 63 communities in larger transportation planning region
- 4.3 million people
- 2.3 million jobs
- Diverse communities and people

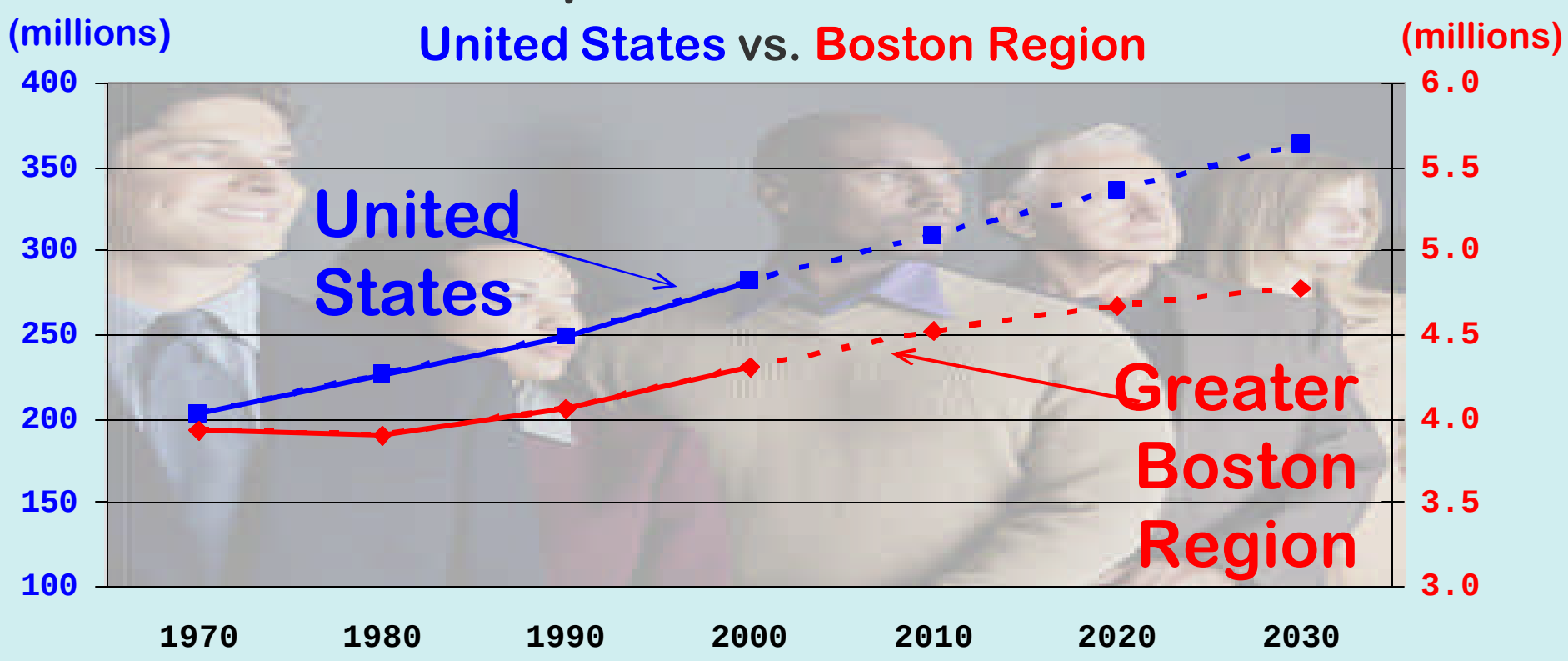


The MetroFuture Model

- **Integrated computer model of the region**
  - Population
  - Land use
  - Zoning
  - Water supply
  - Industry and employment
  - Municipal finance
  - Transit and highways
  - Education
- **Trends are linked to one another**
- **Not a prediction of the future, but a projection if current trends continue**

Projected Population Growth to 2030

- Greater Boston Region may grow 10.8 %
- United States may grow 28%

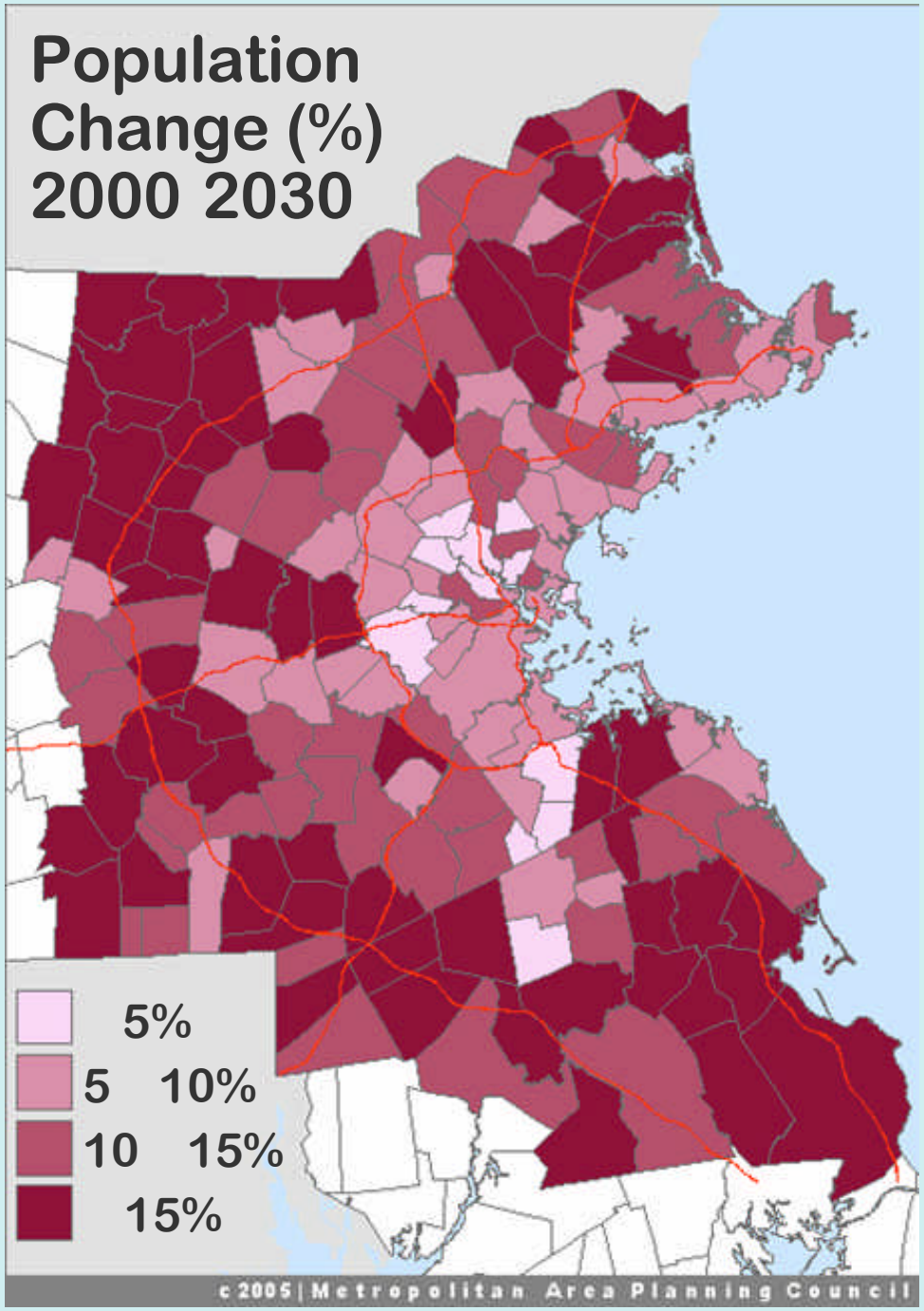


Population Change

Increase of 465,000, or about 10.8%

Largest increases may be urban centers and some suburbs

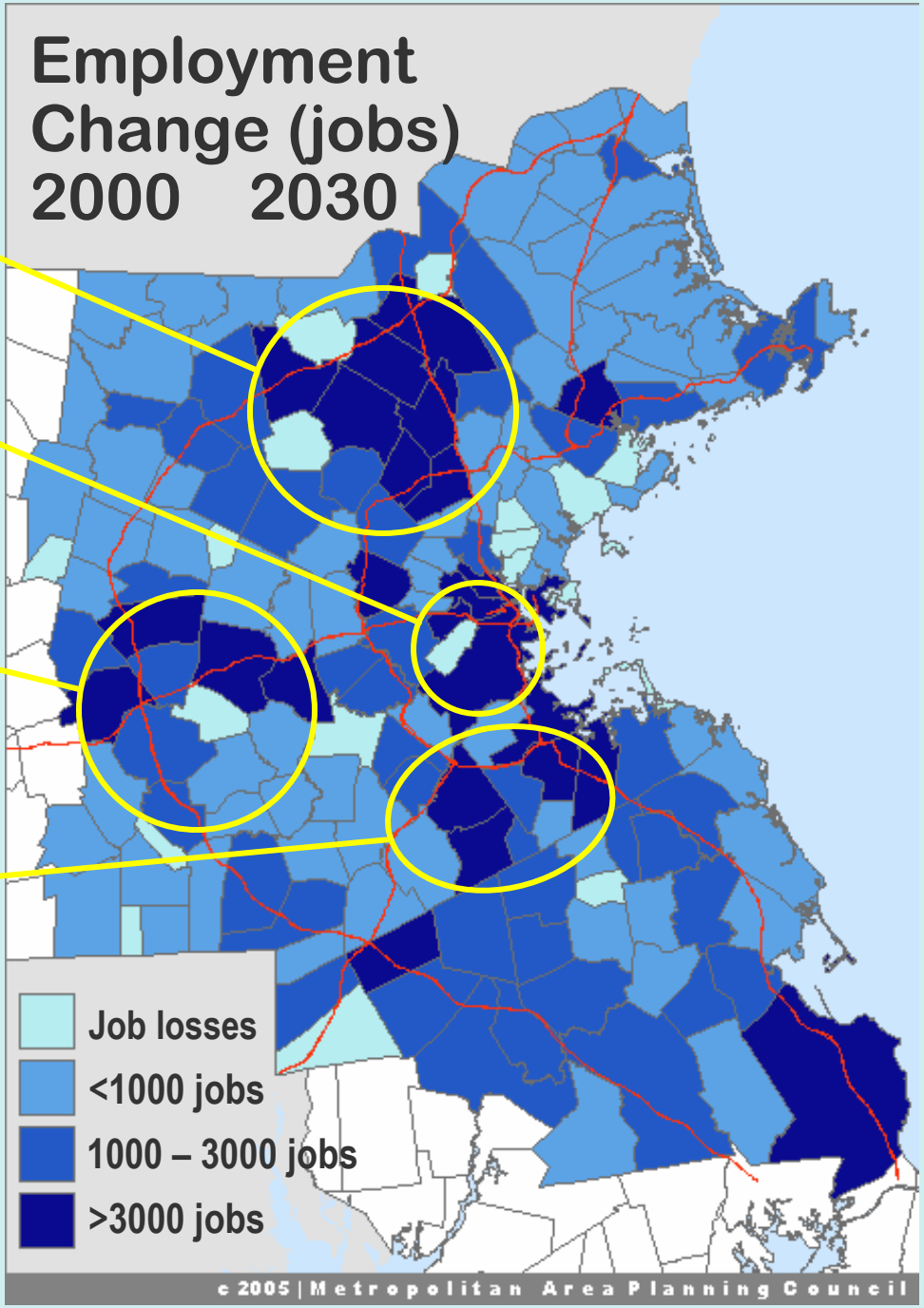
Highest growth rates will be in developing suburbs



ob Growth

Increase of
230,000 jobs,
10% growth

Four major job centers may account for half of new jobs



Changing Economy

Large job gains:

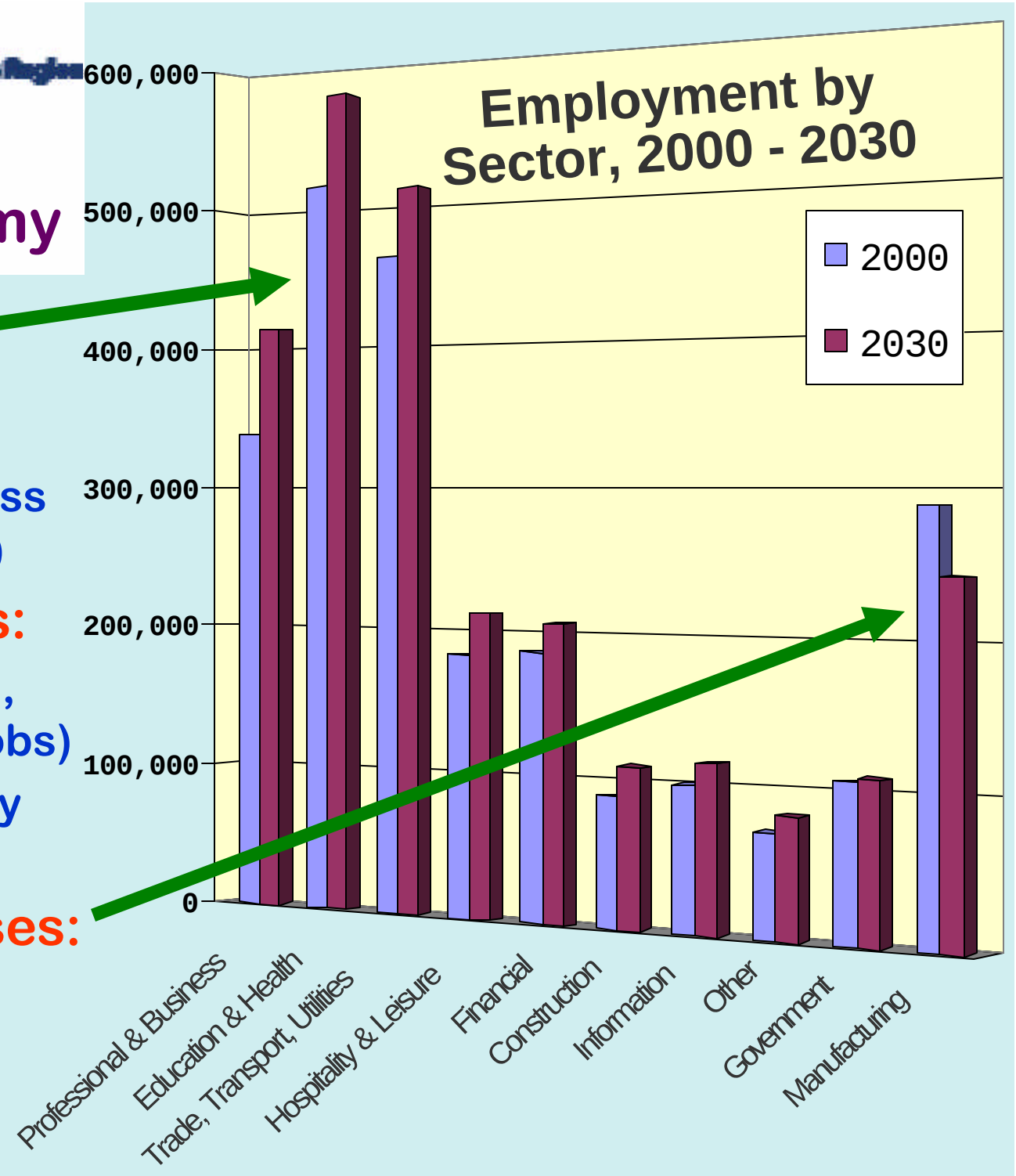
- Education and Health (65,000 jobs)
- Professional & Business Services (75,000 jobs)

Moderate job gains:

- Trade, Transportation, and Utilities (48,000 jobs)
- Leisure and Hospitality (29,000 jobs)

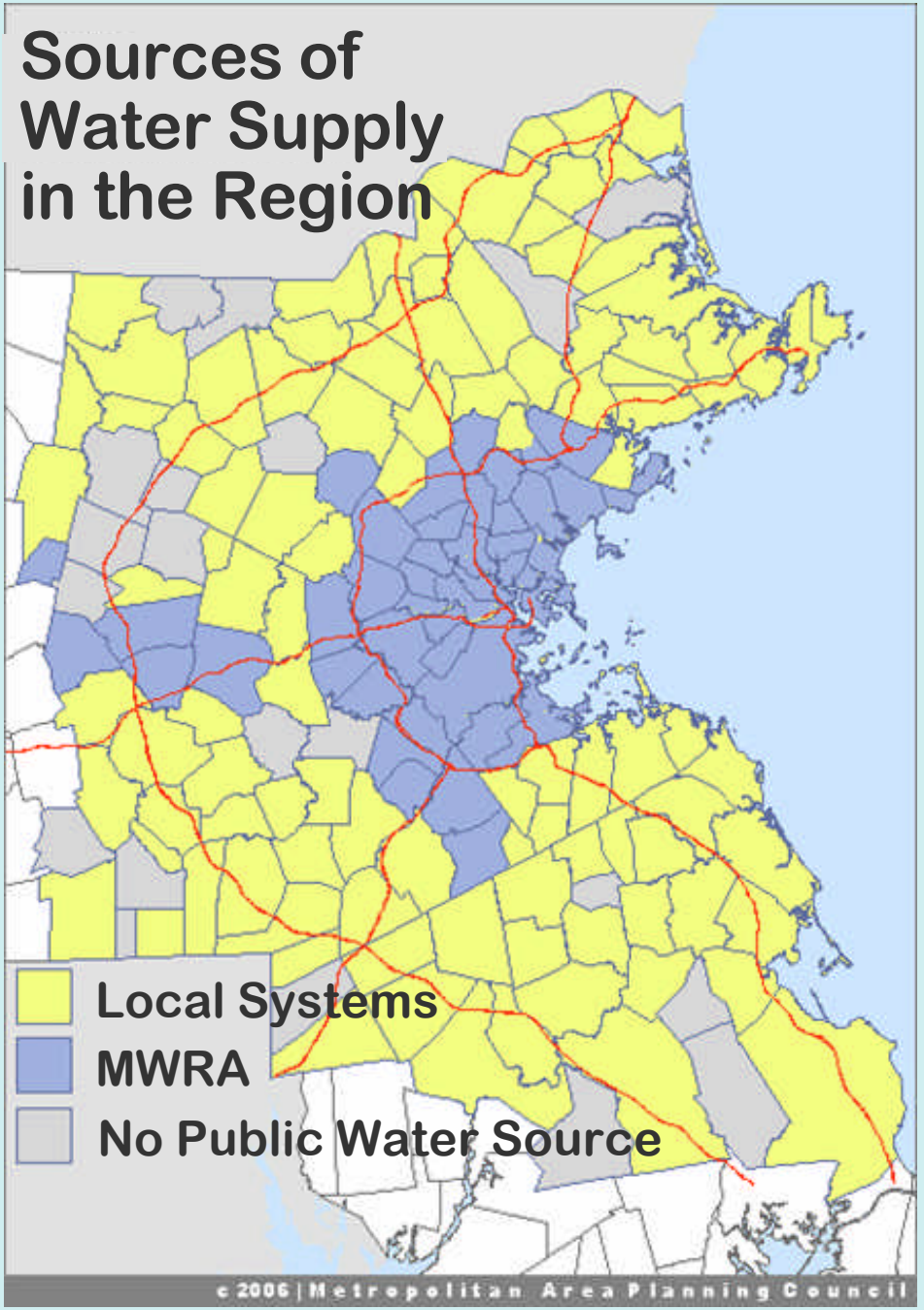
Significant job losses:

- Manufacturing (loss of 46,000 jobs)



The Region's Water Supply

- 45 cities and towns served by MWRA
- 104 communities with local water systems
- 20 towns with no public water sources (rely on private wells and or neighboring towns)



MetroFuture Water Demand Projections-Baseline

Disaggregated demand model:

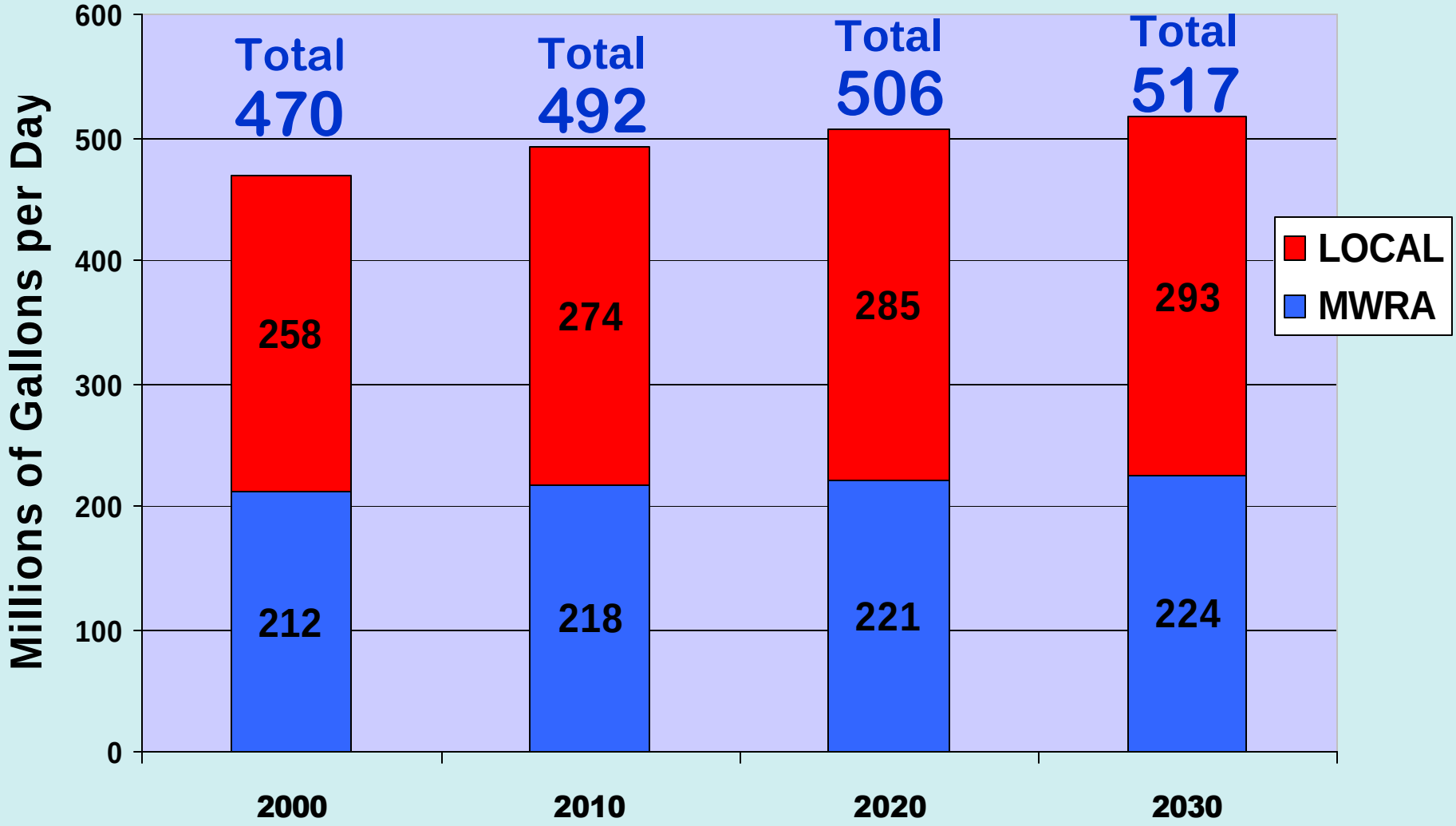
1. **Existing "baseline" 2000 demand (5 year avg, 1998-2002)**

+

2. **Projected future demand for 2010, 2020, & 2030 based on existing trends in 3 water use categories:**
   - **Residential** (population **x** average per-capita factor, 75 gpcd)
   - **Commercial / Industrial** (3 categories: basic, retail, services) (employment projections **x** per-employee water use factors)
   - **Unnaccounted-for-water** (average rate 15%)

Projected demand is then compared to existing (2006) Water Management Act withdrawals *(registration & permit)*

MetroFuture Projected Water Demand, 2000-2030
Summary for 140 Communities in Eastern Mass.



MetroFuture Baseline Water Demand Projections

Summary of changes from 2000 to 2030

Total for the region (140 communities):

2000: 470 mgd **Increase: 47 mgd, or 10%**

2030: 517 mgd

Demand on local sources (104 communities):

2000: 258 mgd **Increase: 35 mgd, or 13.5%**

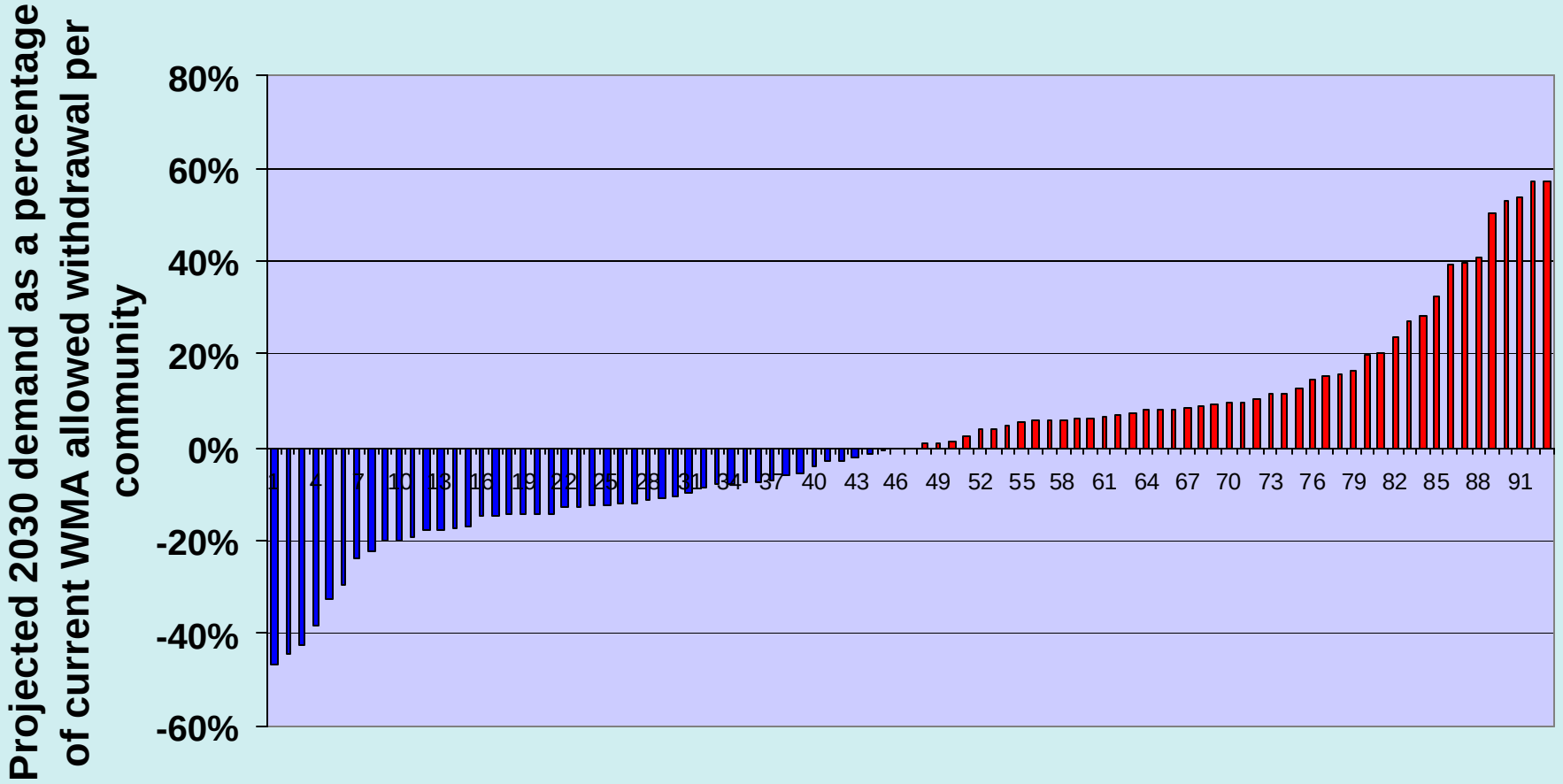
2030: 293 mgd

Demand on MWRA sources (45 communities):

2000: 212 mgd **Increase: 12 mgd, or 6.5%**

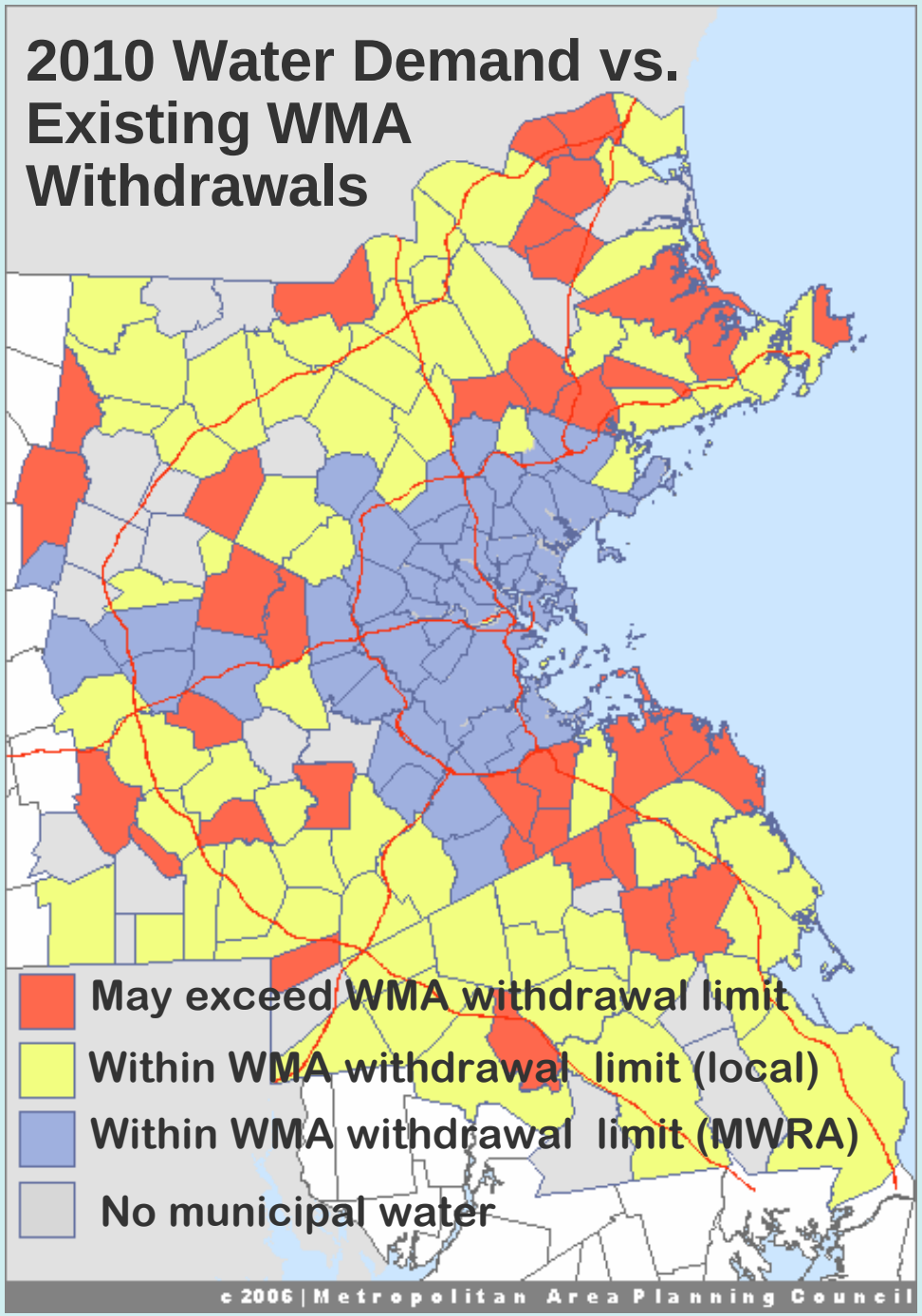
2030: 224 mgd

Projected 2030 Demand as a Percentage of Existing WMA Withdrawals for 95 Eastern Mass. Communities



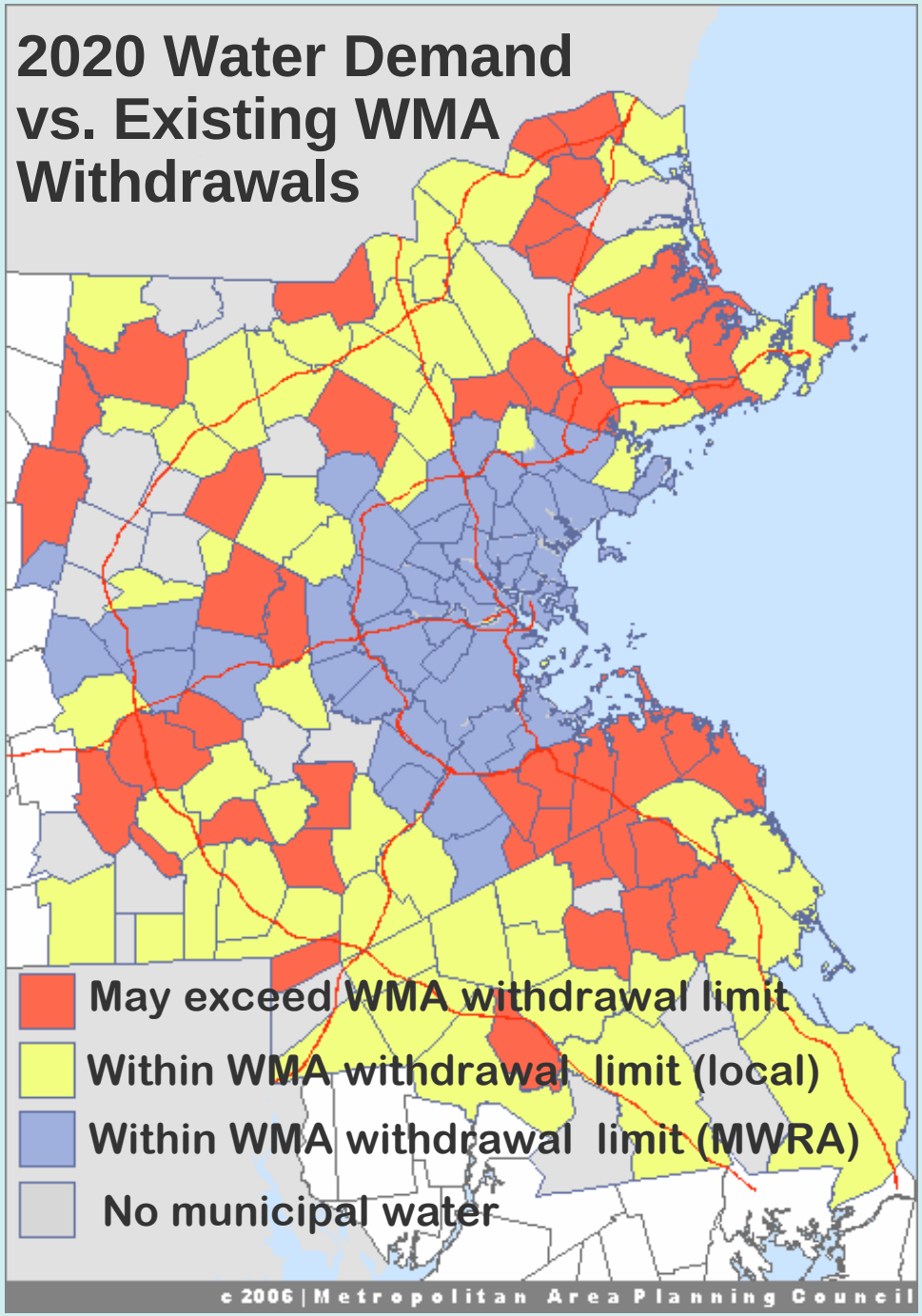
2010 Baseline Water Demand Projections

In 2010, 36 communities may exceed their existing (2006) Water Management Act withdrawals



2020 Baseline Water Demand Projections

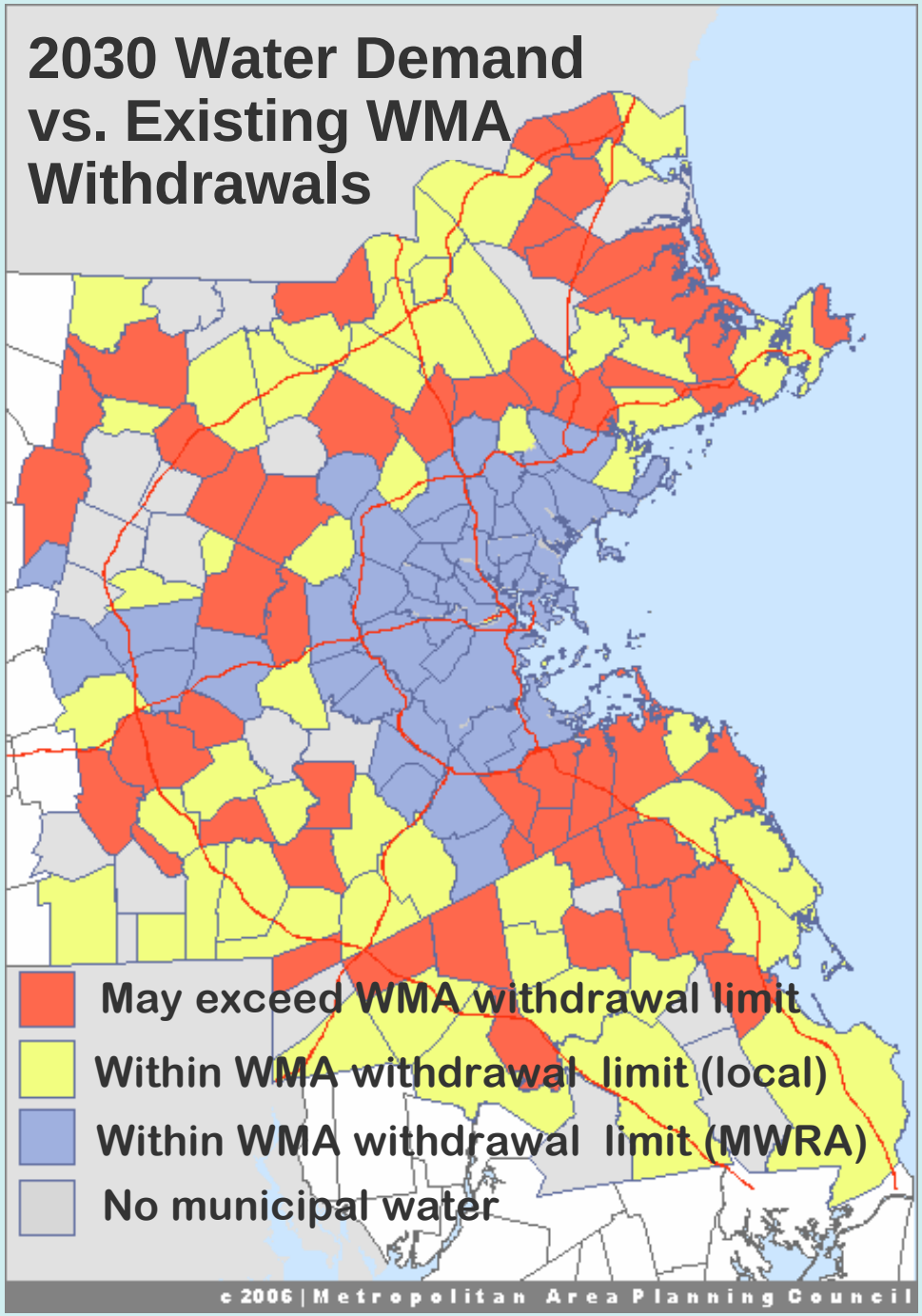
In 2020, 44 communities may exceed their existing (2006) Water Management Act withdrawals



2030 Baseline Water Demand Projections

In 2030, **51 communities** may exceed their existing (2006)Water Management Act withdrawals

(nearly half of the 104 local water systems)

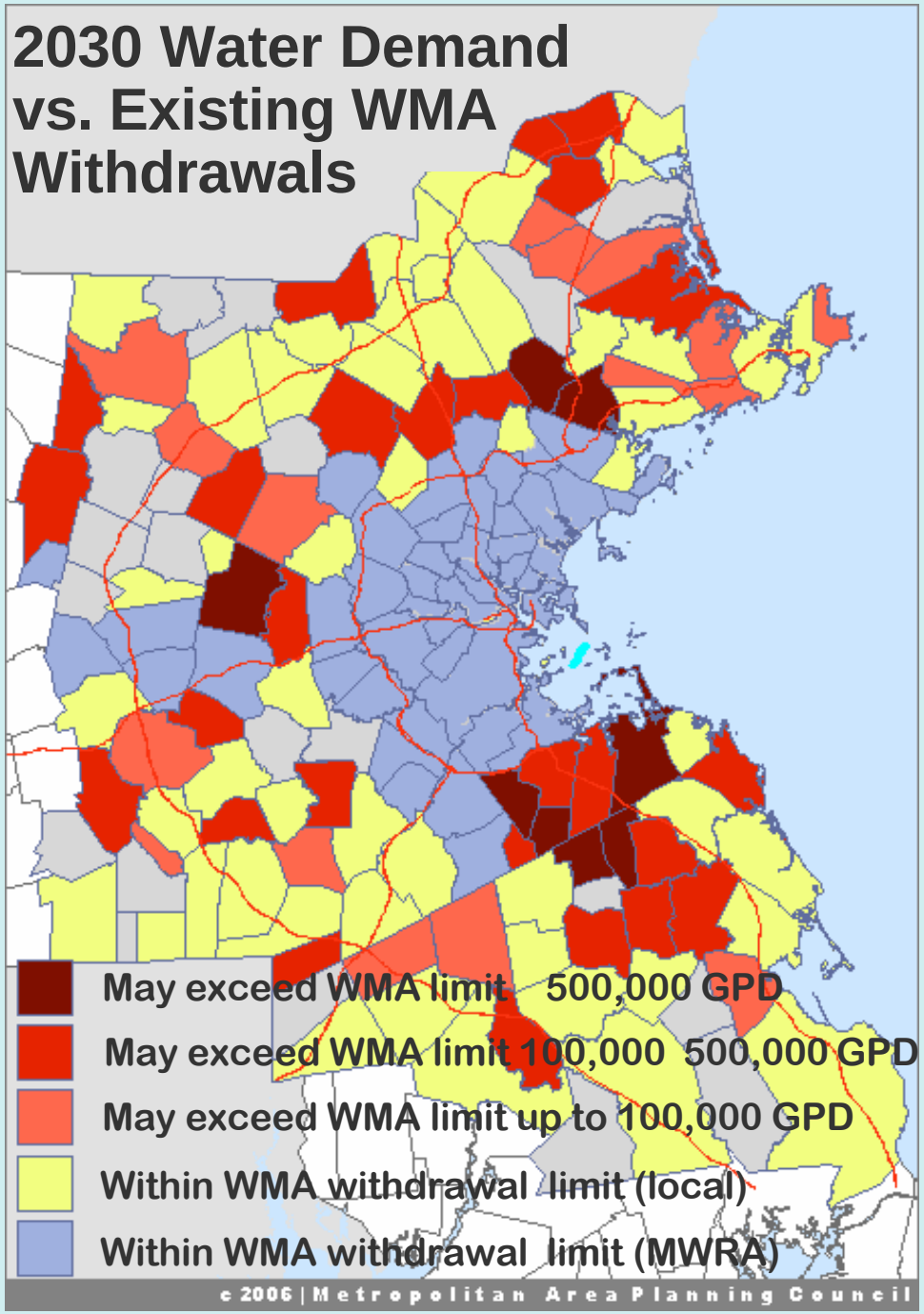


2030 Baseline Water Demand Projections

51 communities may exceed their existing (2006) Water Management Act withdrawal

35 may exceed their existing WMA withdrawal by more than 100,000 gpd

9 may exceed their existing WMA withdrawal by more than 500,000 gpd



BUT…A Projection is Not a Destiny

We can change many of these trends…

- WRC Water conservation standards
- Local residential water conservation efforts
- Industrial commercial water use efficiency
- Peak seasonal demand reduction
- Water Reuse Recycling
- Low Impact Development Stormwater Recharge
- Alternative decentrali ed wastewater treatment
- Public Education

MetroFuture Water Demand Projection "Scenario 2"

1. "Baseline" existing demand for 2000 *reduced by 10%*

2. *Alternative* projected demand for 2010, 2020, & 2030:
   - Residential — 65 gpcd (instead of 75 gpcd)
   - Commercial / Industrial — Reduced by 10%
   - Unaccounted-for-water — 10% (instead of 15%)

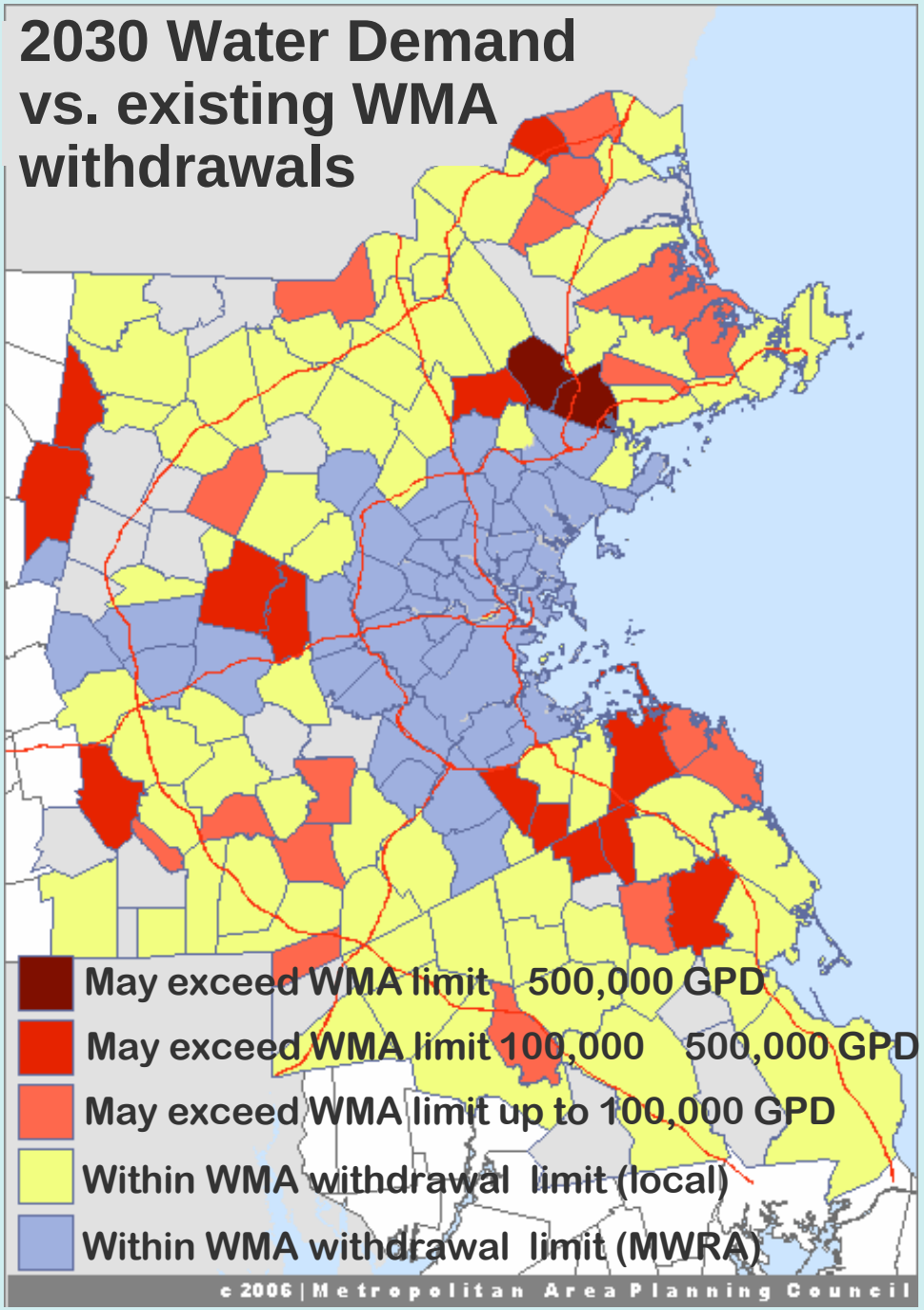
The results on the following page illustrate the impact of these water use factors compared to the "existing trends" scenario shown above.

Scenario 2 2030 Projected Water Demand

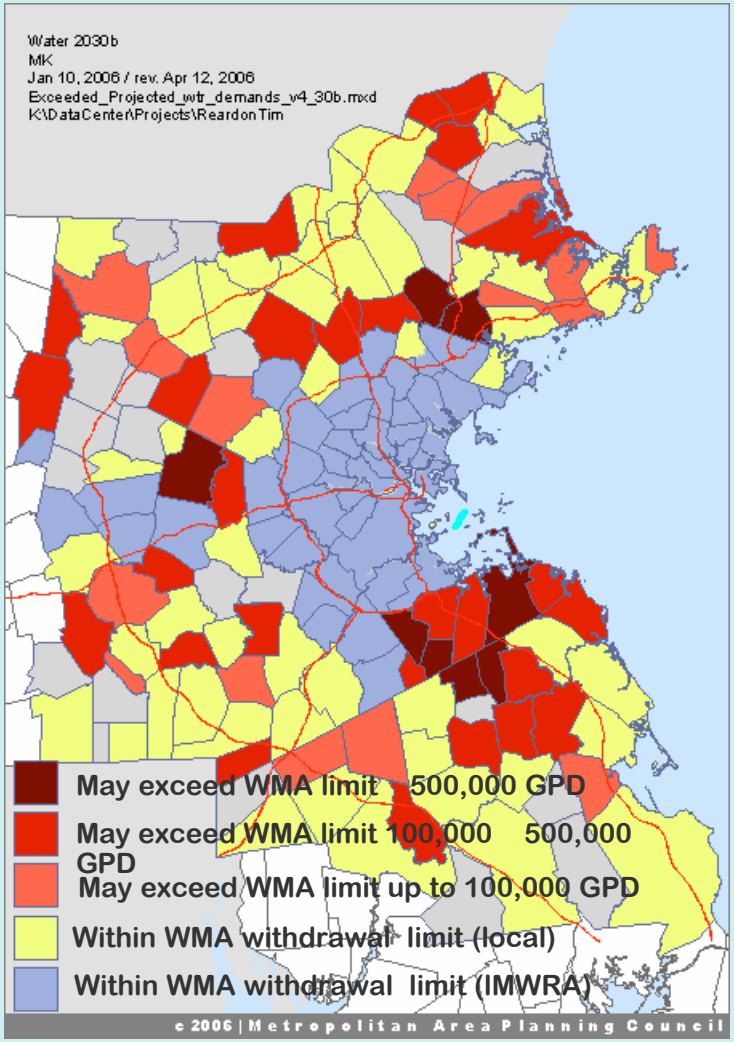
33 communities may exceed existing WMA withdrawals (reduced from 51)

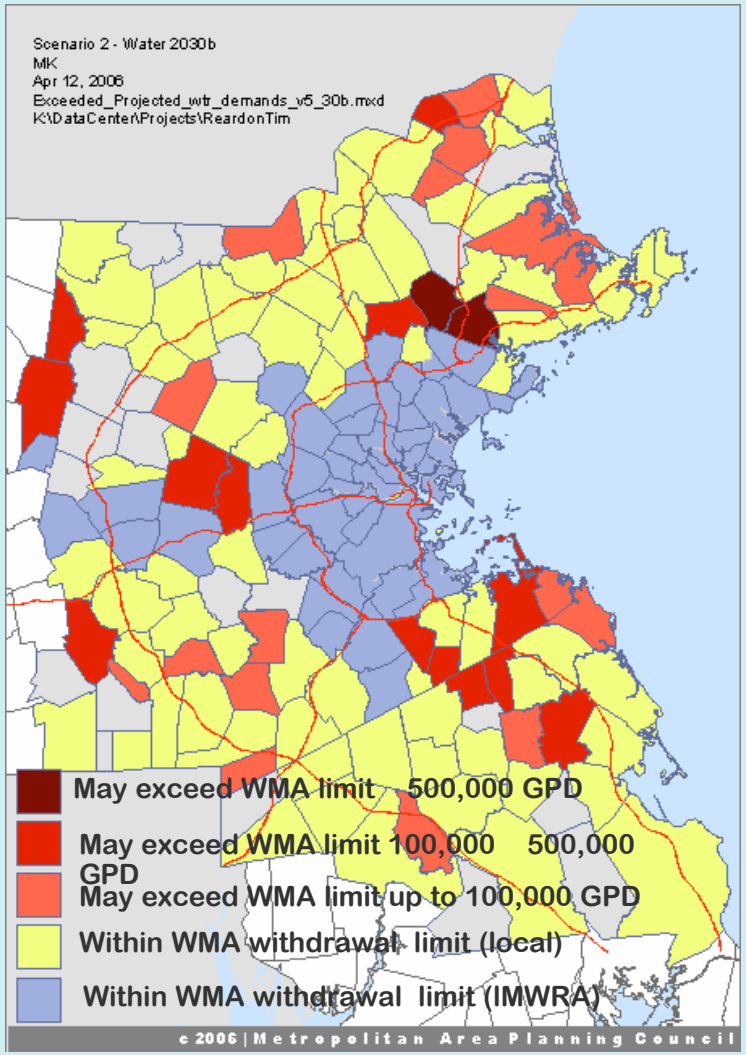
16 may exceed their WMA withdrawals by more than 100,000 gallons a day (reduced from 35)

2 may exceed their WMA withdrawals by more than 100,000 gallons a day (reduced from 9)

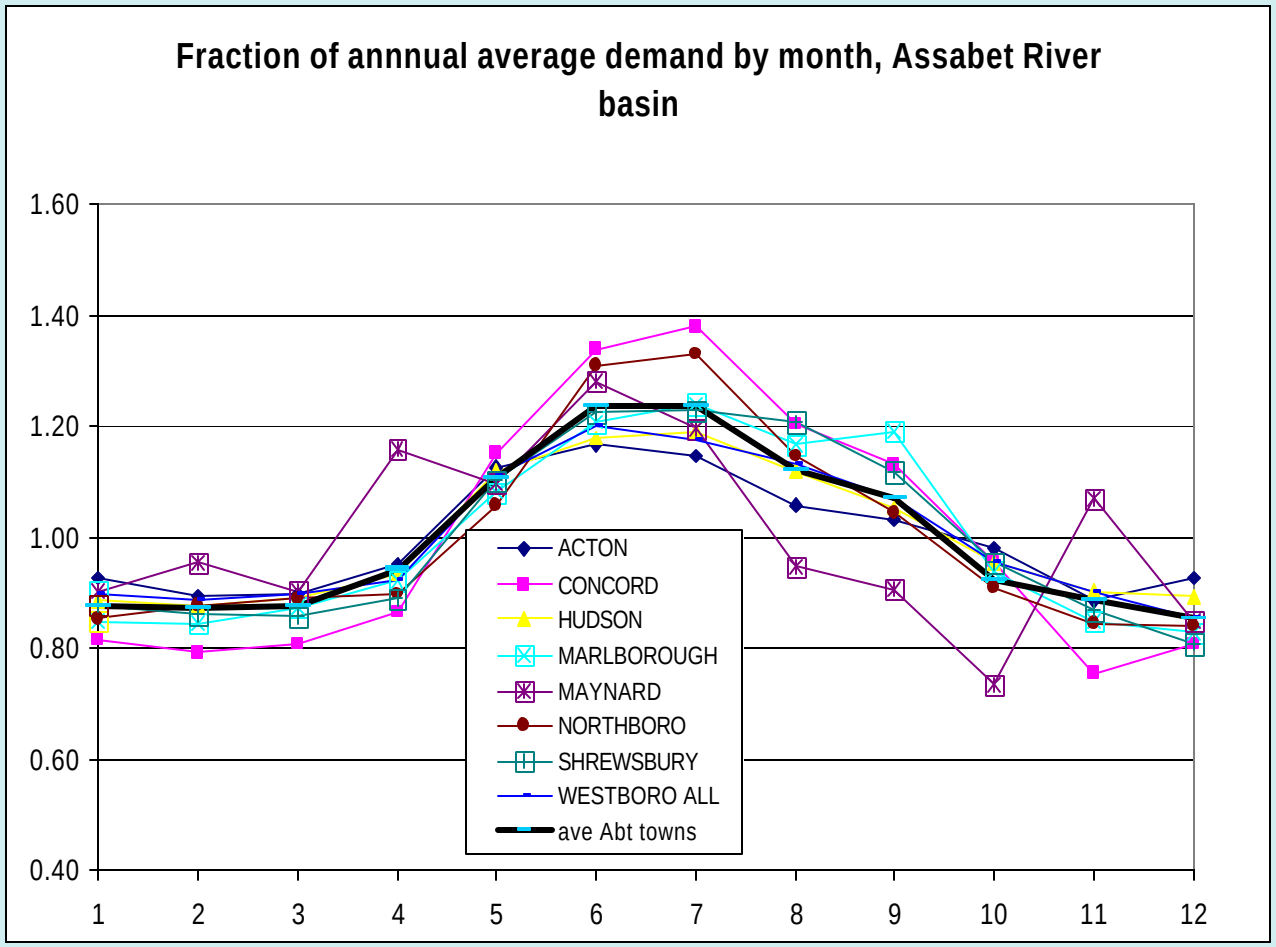


2030 Baseline Projection vs. Scenario 2





SEAS NAL PEA WATER DEMAND



S URCE: USGS (DRAFT SUB ECT T CHANGE)

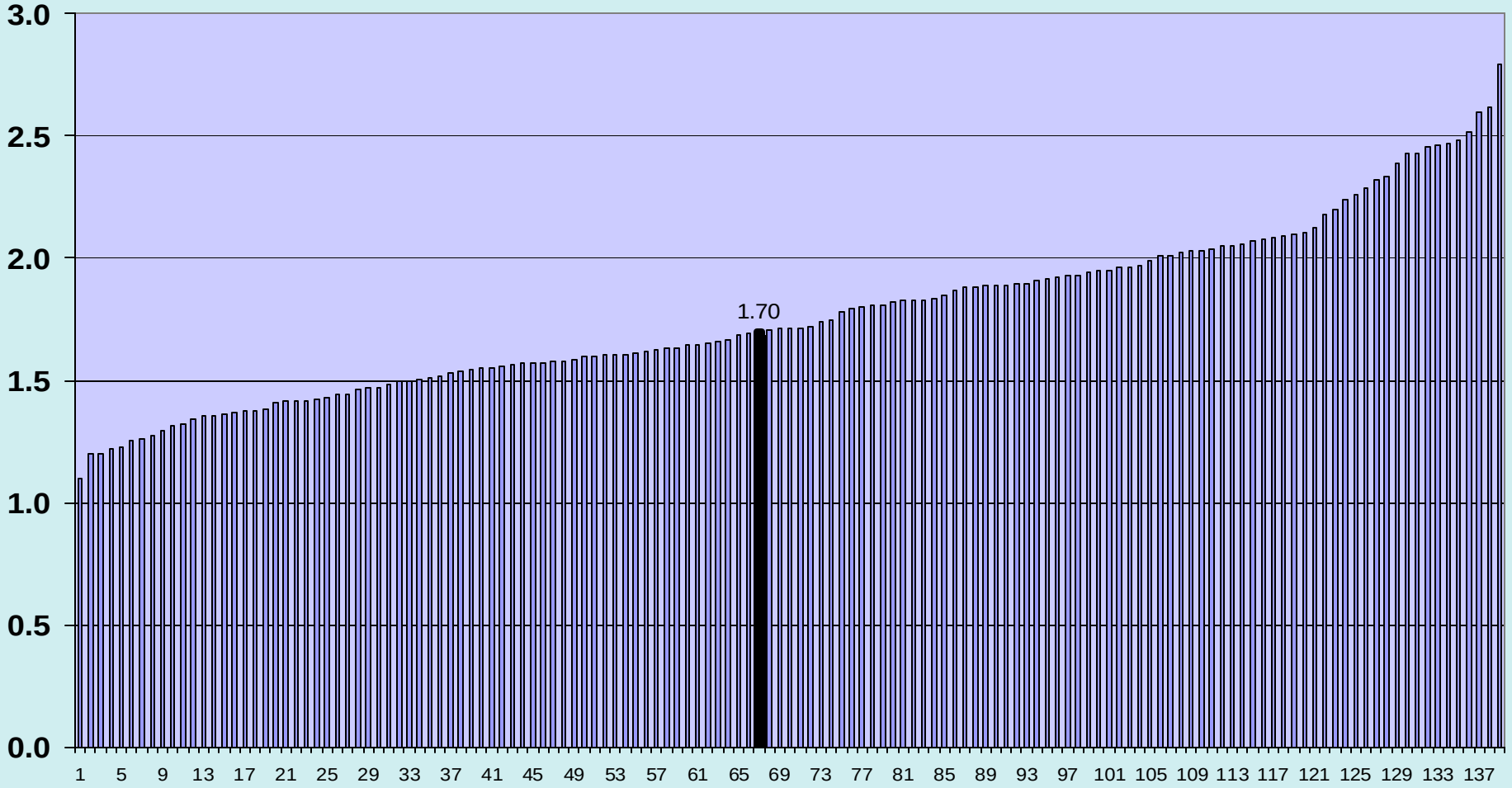
- Example for 8 towns in the Assabet River basin: monthly factor from a 10 year historical record of monthly water supply rates
- Monthly Factor represents the fraction that total monthly demand differed from the annual average demand

USGS science for a changing world

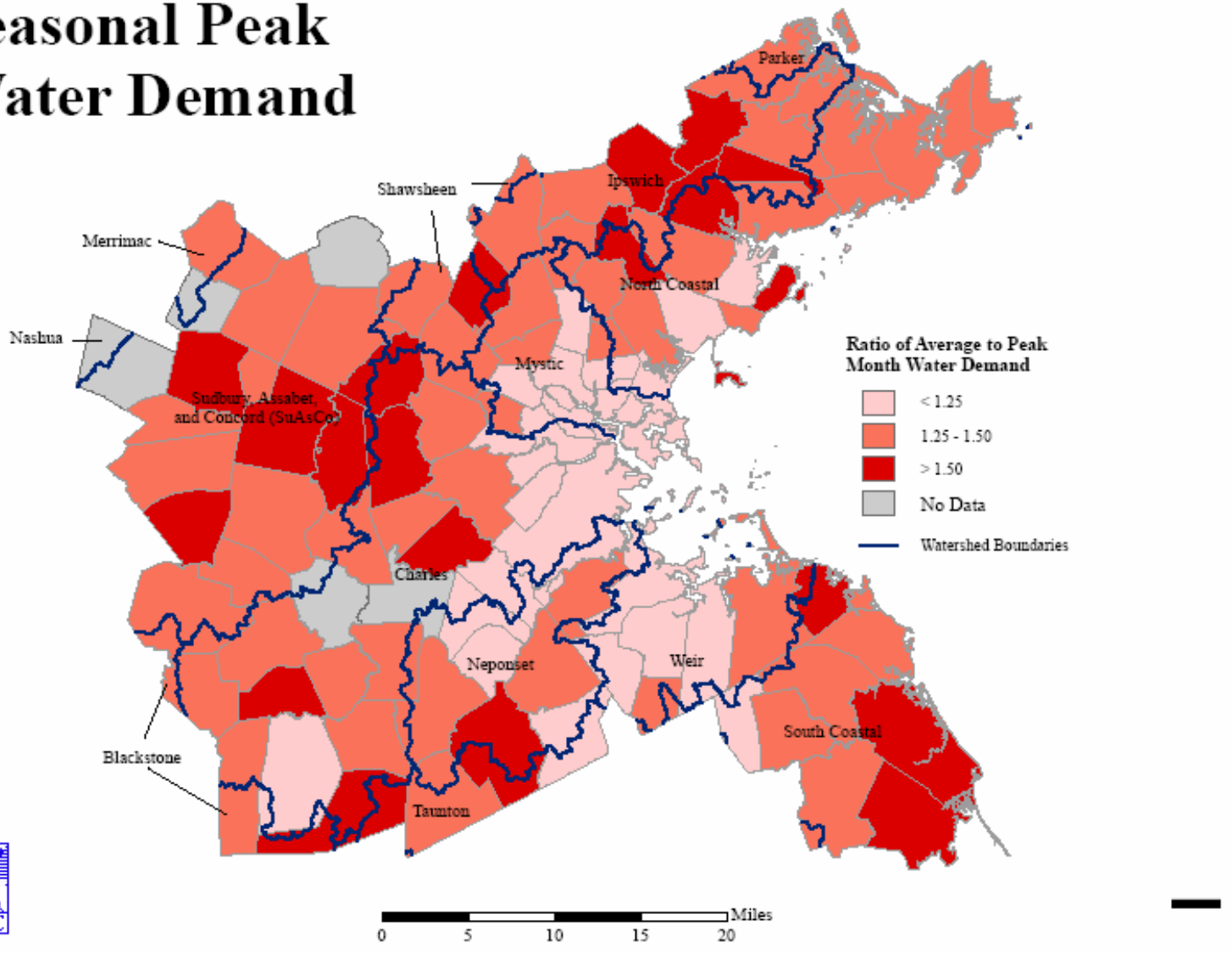
SEASONAL PEAK WATER DEMAND

Average Day to Maximum Day Ratios

for 140 Communities in Eastern Mass. (1999-2004 Avg.)



Seasonal Peak Water Demand



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